Operational and Engineering Modifications Characterization

For each site and the SPR program as a whole, current operational and process data was collected, summarized and analyzed. Historical data and modifications for each site and the SPR as a program are summarized by site in the checklists provided in Attachment J. The original engineering specification provided by the site-wide EIS for each site and the response of the site reviewers and the SPR E&C personnel are provided in Attachment D of this document. Documentation of analysis is also provided in the checklists in Attachment J. Only modifications that were further assessed for significance are discussed by site in the subsection "Site-Specific Modifications."

As there exists potential for the site-specific modifications noted below to affect the SPR program as a whole, historical data, modifications, and program-wide trends are summarized and evaluated for completeness in the Programmatic checklist provided in Attachment J. Modifications are addressed in the "Programmatic Modifications" section below; however, only modifications that were further assessed for significance are discussed. In addition to O&E modifications, alteration of the storage capacity at each site and within each distribution 'group' of the SPR program, i.e. Capline, Texoma, and Seaway, was evaluated.

The current DOE-authorized storage capacity, current inventory, and NEPA-final storage capacity evaluated were compared. All data were assessed to determine (1) if any changes had occurred at the site; (2) whether such change was the result of maintenance, Life Extension (LE), or other project that would be addressed by an existing NEPA document; (3) whether impacts resulting from a previously un-reviewed modification were significant or non-significant relative to the criteria set forth above. Refer to Attachment L for a visual representation of history of the NEPA-final storage capacities by site and by group. A comparison of the current inventory for each site and group can be found as appropriate in the subsections below. O&E modifications and modifications to storage capacity are discussed as separate subsections site-specifically and programmatically below.

Site-Specific Modifications

Information solicited from site reviewers and members of the SPR E&C department and historical information were then evaluated to determine if modifications existed. If site configuration modifications were noted,

investigation was conducted to determine if modifications had undergone a NEPA review and, if so, if a RONR was on file. If no RONR was found, modifications were assessed for potential significance under the CEQ criteria (40 CFR 1508.27), which is adopted in 10 CFR 1021.103 and has been previously described.

Bayou Choctaw

Operational and Engineering Modifications

Site personnel noted O&E modifications for BC. While the majority of modifications were addressed individually by NEPA documents such as CXs, one modification, construction of a new flammable storage building, was determined to require additional analysis as it was constructed several years ago. A RONR was executed in May 1992.

Capacity

EISs for the BC site specifically address impacts as related to the storage capacity of the site. Initially, the site was evaluated for adverse environmental impacts associated with the construction and operation of a storage capacity of 99 MMB of oil in the Final EIS for Bayou Choctaw Salt Dome (FES 76-5). The Capline Group EIS (DOE/EIS-0024) later contemplated expansion of the BC site to 150 MMB including the construction of additional caverns and facilities. Thus, the total storage capacity for which the environmental impacts of five fill and drawdown cycles over 20 years have been evaluated is 150 MMB. Currently, BC has a DOE-authorized storage capacity and inventory of 76 MMB, which is within the capacity previously evaluated for adverse environmental effects. Therefore, additional assessment of storage capacity at this site is not warranted at this time.

Big Hill

Operational and Engineering Modifications

Site personnel noted O&E modifications for BH. These included addition of a slop oil tank for use on-site, modification of an ammonium bisulfite tank for use as a slop oil tank, installation of an additional tank for freshwater, which is now used for raw water, reduction in the number of raw water injection pumps, which is still greater than the number originally evaluated, installation of a commercial potable water line, and increased diameter of the brine and raw water pipelines.

Inspection of historical NEPA documentation revealed that the installation of the potable water line, the construction of a raw water tank on-site, and the addition

of raw water pumps had received a NEPA review prior to construction, that a CX applied, and that a RONR is on file. The installation of the potable water line received an individual NEPA review resulting in a CX determination. The construction of the raw water tank on-site and the addition of raw water pumps occurred as part of a consolidated LE task (BH-LE-321) in 1998 and were reviewed as such.

Impacts resulting from the addition of one slop oil tank and the modification of a tank to store slop oil were resolved to be within the scope of impacts assessed in the original EIS (DOE/EIS-0029). This original EIS evaluated impacts resulting from the construction of two blanket oil tanks with a capacity of 13,000 barrels (bbls) and two slop oil tanks with a capacity of 9,000 bbls. Such construction would have resulted in a larger disrupted footprint and potential operating impacts, e.g. emissions from throughput and seals, on-site for the length of operation as well as greater impacts during the construction phase due to preparation of the site for construction of four separate structures. The construction of two 10,000 barrel slop oil tanks on-site has resulted in a much smaller footprint, significantly decreased construction impacts, and decreased operational impacts resulting not only from the shortened duration of operations but also from decreased overall capacity, throughput, and seals that could potentially contribute to impacts such as general air and fugitive air emissions. Additionally, as one tank has yet to be placed into operation for slop oil, operational impacts have yet to occur. So, the current configuration likely considerably minimized the potential impacts evaluated in the EISs. Further assessment is not warranted as construction of the tanks are activities whose impacts have been previously assessed.

The diameter difference between the raw water and brine pipelines evaluated and the raw water and brine pipelines installed at the site is nominal, 2 and 6 inches, respectively. The originally evaluated raw water pipeline was to be 46 inches in diameter and the installed pipeline is 48 inches in diameter. The percent difference in diameter for the raw water pipeline is less than 5%. The originally evaluated brine pipeline was to be 42 inches in diameter and the installed pipeline is 48 inches in diameter. The percent difference in diameter for the brine pipeline is less than 15%. These differences are incremental and it is likely that substitutions occurred during construction to ease construction costs and future maintenance of the pipelines. Differences in impact to the environment would not have been measurable and likely occurred along the pipeline right-of-way during the construction phase, from which the environment adjacent to the right-of-way has long since recovered. As well, impacts resulting from general operations are likely only incrementally greater than the impacts originally evaluated and would certainly not be significant. The supplemental EIS (DOE/EIS-0075) supports this conclusion in that it references

but does not re-evaluate the impacts of installation and operation of a nominally larger diameter pipeline. All indications are that the impacts of only incrementally larger diameter pipelines are substantially similar in magnitude.

The site is currently permitted by the Environmental Protection Agency (EPA) and the Railroad Commission of Texas (RCT) and operates in accordance with all existing discharge permits. Thus, no further assessment of these is necessary. An additional O&E modification noted for the Big Hill site is the construction of the degas plant. An EA was published in September of 1994 to assess the impacts of implementation of this degas plan and construction of the necessary facilities. No additional NEPA documentation was needed to assess impacts associated with the second degas project scheduled to commence operations in 2004, as documented by an Action Description Memorandum.

Capacity

EISs for the BH site specifically address impacts as related to the storage capacity of the site. Initially, the site was evaluated for the construction and storage of a capacity of 100 MMB (DOE/EIS-0029). The Phase III Texoma and Seaway EIS (DOE/EIS-0075) contemplated expansion of the BH site by 40 MMB to a total storage capacity of 140 MMB including the construction of additional caverns and facilities. Finally, the SM Decommissioning and BH Expansion EA (DOE/EA-0401) evaluated the addition of 20 to 22 MMB to the NEPA-final capacity of BH, including additional incremental construction or related impacts. Thus, the total storage capacity for which the environmental impacts of five fill and drawdown cycles over 20 years have been evaluated is 162 MMB. Currently, BH has a DOE-authorized storage capacity of 170 MMB and inventory of 129.4 MMB. Actual inventory is within the capacity previously evaluated for adverse environmental effects. However, the DOE-authorized capacity exceeds the NEPA-final capacity. Neither the DOE-authorized capacity nor the NEPA-final capacity exceeds the capacities for which the site is permitted through RCT permits [redacted] and [redacted] [redacted]

DOE has an internal requirement to survey and track cavern size and capacity via sonar at least every ten years. DOE-authorized capacities are set based on sonar of the caverns and reflect the actual capacity of each cavern. This requirement allows DOE to maintain awareness of the effects of cavern creep and oil movements on cavern capacity and compliance with permits as issued by RCT. DOE has been vigilant regarding fulfillment of this requirement, updating the authorized storage capacity of each site to reflect variations in cavern storage capacity as shown by the results of the sonar investigations. That actual cavern capacity would increase and eventually exceed the NEPA-final capacity was anticipated as a consequence of drawdown in the original BH EIS (DOE/EIS-

0029) and its supplemental EIS (DOE/EIS-0075). As oil has been moved from the BH site through the introduction of raw water into the caverns to displace oil, additional leaching has occurred in affected caverns, increasing the cavern capacity beyond what was originally leached and filled. Leaching is expected throughout the life of the project due to oil movements, etc and was evaluated in the original EISs. As actual capacities increase, they are reported via the results of the sonar investigations. A correlative increase in overall site capacity results. Such increases are a culmination of minute modifications to cavern storage capacity that are permitted appropriately through RCT and for which the environmental impacts have already been evaluated via the original and subsequent EISs' evaluation of five fill and drawdown cycles.

Leaching of caverns in salt domes to a specific storage capacity is achieved via an estimation method. The storage capacity of a cavern is estimated based on an anticipated ratio of brine discharge to cavern space created. The original NEPA documentation evaluated potential impacts associated with the leaching of caverns based on these assumptions. The ratio utilized when leaching the original SPR caverns was seven barrels of brine discharged equals the creation of one barrel of oil storage. Most recently, the ratio of brine discharged to storage capacity created utilized for budgetary purposes has been decreased. Thus, for the purposes of budgeting potential expansion of the SPR, it was estimated that six barrels of brine discharged equals the creation of one barrel of oil storage. Actual storage created, however, is dependant on the saturation or lack thereof of the brine being discharged. Although the leaching process is as controlled as possible, it is not an absolute process and results, i.e. the final storage capacity created, vary based on the conditions present in each dome during the leaching of each cavern. Hence, an increase in DOE-authorized capacity based on minute increases in individual cavern capacities as reported in the results of the sonar investigations is of little consequence when the uncertainty of the cavern creation process is considered and given that the original NEPA documentation anticipated and evaluated the potential adverse environmental impacts of the additional leaching of cavern capacity that accompanies the drawdown portion of the fill and drawdown cycle.

These potential adverse environmental impacts to water resources, air quality, land use, biodiversity, natural and cultural resources, and socioeconomics included impacts associated with noise pollution and the potential for brine and oil spills associated with operations as well as each drawdown and fill cycle. Impacts were evaluated for all SPR sites for a total of five full fill and drawdown cycles. The design of the SPR sites including cavern specifications and anticipated permitting have been set to accommodate the increasing cavern capacity due to additional leaching. The BH site was evaluated for a total drawdown of [redacted] MMB of crude oil over approximately a 20 year period and for

total fluid movements (on to and off of the site) of [redacted] MMB of crude oil. These oil movements were evaluated with all accompanying operational requirements that could have direct adverse environmental effects such as displacement and disposal of brine during fill cycles and introduction of raw water as required during drawdown cycles.

Relative to drawdown, displacement of raw water was evaluated as to depression of the raw water source, i.e. surface water body, as well as potential biological and hydrological effects on the source such as decreased biodiversity, increased salinity, and decreased overall water quality during each full drawdown cycle. Displacement of raw water was evaluated as if it was occurring in accordance with permit specifications and any adverse environmental effects associated with modification of existing permits were also evaluated. Displacement of raw water currently occurs according to permit as evaluated. The current permit authorizing raw water withdrawal at the BH site is Texas permit [redacted]

Relative to fill and refill, displacement and disposal of brine from the cavern requires discharge of brine to the environment. Such discharge occurs as evaluated in EIS-0075, i.e. via brine diffusal in the Gulf of Mexico, and as permitted by EPA Region 6 NPDES permit [redacted] Potential adverse environmental impacts evaluated relative to brine disposal include impacts associated with a brine spill on-site as well as off-site (due to failure of the brine line), hydrocarbon emissions associated with entrained oil from the oil/brine interface, increases in salinity and decreases in water quality and biodiversity at the receiving surface water body, the Gulf of Mexico, and other effects on the benthic and marine environment at/near the point of discharge. The impacts currently associated with disposal occur within permit limitations as was assumed during the initial evaluation. As disposal of brine for five fill cycles totaling [redacted] MMB was evaluated, disposal of brine that would result from the eventual initial filling of the additional authorized storage capacity of 8 MMB comprises approximately 1.1% of the evaluated impacts for the remaining 4 refill cycles. Further, the potential impacts associated with the movement of only [redacted] MMB from the BH site since its inception has resulted in a current condition of the caverns that is far below the increase in actual cavern storage capacity for the five drawdown cycles anticipated ([redacted] MMB) and whose potential adverse environmental effects were evaluated within the aforementioned EISs.

So, as to direct effects, any potential adverse environmental effects that could be associated with an increase in authorized cavern capacity due to minor oil movements and balanced against the effects of cavern creep are much less than the impacts previously evaluated for total fluid movements on and off site of approximately [redacted] MMB (five full fill and drawdown cycles). However, the

EISs evaluated indirect impacts as well as direct impacts. Secondary environmental effects evaluated for the five fill and drawdown cycles included hydrocarbon emissions resulting from distribution, increased risk of oil and brine spills during distribution, socioeconomic impacts, and impacts resulting from noise associated with site operation and maintenance.

In the Phase III Texoma and Seaway Group Salt Domes EIS (DOE/EIS-0075), direct and indirect impacts were evaluated based on the design criteria of five fill and drawdown cycles, i.e. total fluid movement of approximately [redacted] MMB. Each operational phase, leach, initial fill, drawdown, and refill, is evaluated for its contribution of the overall effects of the site over its intended life. To date, the site has never been completely drawn down. Thus, direct and indirect impacts associated with the minor oil movements and the additional 8 MMB in DOE-authorized capacity are well below the magnitude of impacts to air quality, surface water bodies including the Gulf of Mexico and raw water sources, land use, socioeconomics, and natural and cultural resources that were evaluated in the NEPA documentation for this site. What's more, the impacts attributable to minor oil movements and any additional capacity are not associated with any modification to the footprint of the site, which remains unchanged.

In summary, the impacts of the currently authorized 170 MMB capacity represent no un-assessed impacts. Given that the site footprint remains unchanged and no impacts can be attributed to additional construction or leaching, additional assessment of storage capacity at this site for the new authorized storage capacity is unnecessary to comply with NEPA. Thus, this SA will serve as the necessary NEPA documentation that no significant or un-assessed impacts are associated with an authorized capacity of 170 MMB for the BH site.

Bryan Mound

Operational and Engineering Modifications

Site personnel noted O&E modifications for BM. These included brine tank construction, establishment of a commercial potable water line and system for site use, and conversion of pump BMP-26 for use as a sparge pump. Both the construction of the brine tank and the conversion of BMP-26 occurred during LE activities, were reviewed under NEPA in 1998 and a CX (BM-LE-340) applied. A RONR for these is currently on file. As to the establishment of the commercial water line, an Army Corps of Engineers (COE) permit was obtained for the line and its installation. The application made to COE would have required assessment of environmental impacts in anticipation of public comment. A review of the permit documentation indicates that this requirement was met and a COE permit was issued for the pipeline, which was installed in 1985 as Task

MS-OM-013. Additionally, further review of this modification is unnecessary as impacts to the environment would have been insignificant based on the CEQ criteria when they occurred in 1985 and the adjacent environment has long since recovered. No further assessment is recommended.

Capacity

EISs for the BM site specifically address impacts as related to the storage capacity of the site. Initial construction of the site was evaluated for the construction and storage of a capacity of 63 MMB in the Final EIS for Bryan Mound Salt Dome (FES-76/77-6). The Seaway Group EIS (DOE/EIS-0021) contemplated expansion of the BM site by 100 MMB including the construction of additional caverns and facilities and the Phase III Texoma and Seaway EIS (DOE/EIS-0075) evaluated further expansion of the BM site by either 40 or 60 MMB including construction of additional caverns and facilities. Thus, the total storage capacity for which the environmental impacts of five fill and drawdown cycles over 20 years have been evaluated is 223 MMB. Currently, BM has a DOE-authorized storage capacity of 232 MMB and inventory of 230.4 MMB. Actual inventory exceeds the NEPA-final storage capacity previously evaluated for adverse environmental effects, but not the DOE-authorized capacity. However, the DOE-authorized capacity does exceed the NEPA-final capacity. Neither the DOE-authorized capacity nor the NEPA-final capacity exceeds the capacities for which the site is permitted through RCT permits [redacted] and [redacted]

As discussed above in the capacity subsection for the BH site, the DOE requirement to survey and track cavern size via sonar is applied at all SPR sites including BM. Thus, the DOE-authorized capacity for BM is also set based on sonar of actual caverns and reflects the actual capacity of each cavern. Also similar to BH is the realization that an increase in actual cavern capacity that has exceeded that of the NEPA-final capacity was anticipated as a consequence of drawdown in the original BM EIS (FES 76/77-6) and its supplemental EISs (DOE/EIS-0021 and DOE/EIS-0075). As [redacted] MMB of oil have been moved from the BM site via the introduction of raw water into the caverns, additional leaching has occurred in affected caverns, increasing the cavern capacity beyond what was originally leached and filled. As actual cavern capacities increase due to the aforementioned factors and are reported via the results of the sonar investigations, a correlative increase in overall site capacity results. Such increases are a culmination of minute modifications to cavern storage capacity that are permitted appropriately through RCT and for which the environmental impacts have already been evaluated via the original and subsequent EISs' evaluation of five fill and drawdown cycles.

As well, the original NEPA documentation for this site also evaluated potential impacts associated with the leaching of caverns based on given assumptions to be utilized in the leaching process. The assessment of impacts in the aforementioned EISs for this site was predicated upon the same assumptions that were utilized in the BH NEPA documentation. Both evaluated impacts while considering that cavern leaching to an estimated capacity may exceed or fail to complete the expected capacity during initial leaching and that additional leaching would occur via the introduction of raw water as required for oil movement. All impacts for BM were assessed for five fill and drawdown cycles. Hence, for BM as well as BH, an increase in DOE-authorized capacity based on minute increases in individual cavern capacities is of little consequence when the uncertainty of the cavern creation process is considered and given that the original NEPA documentation anticipated and evaluated the potential adverse environmental impacts of the additional leaching of cavern capacity that accompanies the drawdown portion of the fill and drawdown cycle.

These potential adverse environmental impacts to water resources, air quality, land use, biodiversity, natural and cultural resources, and socioeconomics included the impacts associated with noise pollution and the potential for brine and oil spills associated with operations as well as each drawdown and fill cycle. The design of the BM site including cavern specifications and anticipated permitting have been set to accommodate the increasing cavern capacity throughout these cycles . The BM site was evaluated for a total drawdown of [redacted] MMB of crude oil over approximately a 20 year period and for total fluid movements (on to and off of the site) of [redacted] MMB of crude oil. To date, the only potential impacts that have been realized relative to drawdown are impacts associated with the movement of [redacted] MMB of oil. That only 3.7% of the total oil evaluated for drawdown from the BM site has actually been moved indicates that current condition of the caverns relative to actual storage capacity is far below the increase in actual cavern storage capacity anticipated for five drawdown cycles [redacted] MMB) whose potential adverse environmental effects were evaluated within the aforementioned EISs. These oil movements were evaluated with all accompanying operational requirements that could have direct adverse environmental effects such as displacement and disposal of brine during fill cycles and introduction of raw water as required during drawdown cycles.

Site-specific effects relative to drawdown, i.e. displacement of raw water, and relative to fill and refill and displacement and disposal of brine, were evaluated in all EISs. For a capacity of 223 MMB, evaluation occurred in EIS-0075. Displacement of raw water was evaluated relative to depression of the raw water source, i.e. surface water body, as well as potential biological and hydrological effects on the source such as decreased biodiversity, increased salinity, and

decreased overall water quality during each full drawdown cycle. Displacement of raw water was evaluated as if it was occurring in accordance with permit specifications and any adverse environmental effects associated with modification of existing permits were also evaluated. Displacement of raw water currently occurs according to permit as evaluated. The current permit authorizing raw water withdrawal at the BM site is Texas permit [redacted]

Displacement and disposal of brine from the cavern requires discharge of brine to the environment during fill and refill. Such discharge occurs as evaluated in EIS-0075, i.e. via brine diffusal in the Gulf of Mexico, and as permitted by EPA Region 6 NPDES permit [redacted] Potential adverse environmental impacts evaluated relative to brine disposal include impacts associated with a brine spill on-site as well as off-site (due to failure of the brine line), hydrocarbon emissions associated with entrained oil from the oil/brine interface, increases in salinity and decreases in water quality and biodiversity at the receiving surface water body, the Gulf of Mexico, and other effects on the benthic and marine environment at/near the point of discharge. The impacts currently associated with disposal occur within permit limitations as was assumed during the initial evaluation. Disposal of brine that would result from the eventual initial filling of the additional authorized storage capacity of 9 MMB comprises only 1% of the evaluated impacts for the remaining 4 refill cycles. So, as to direct effects, any potential adverse environmental effects that could be associated with an increase in authorized cavern capacity due to minor oil movements and balanced against the effects of cavern creep are much less than the impacts previously evaluated for total fluid movements on and off site of approximately [redacted] MMB (five full fill and drawdown cycles).

As well, EIS-0075 evaluated indirect impacts associated with five full fill and drawdown cycles. Secondary environmental effects were evaluated for the five fill and drawdown cycles of 223 MMB, i.e. total fluid movement of approximately [redacted] MMB, in the Phase III Texoma and Seaway Group Salt Domes EIS (DOE/EIS-0075). These include hydrocarbon emissions, increased risk of oil and brine spills, socioeconomic impacts, and impacts resulting from noise associated with site operation and maintenance. Previous NEPA documentation for BM (DOE/EIS-0021) also evaluated the cumulative direct and indirect impacts of an expansion in the Seaway Group of up to 263 MMB for five full fill and drawdown cycles. Each phase of the site, construction and operation and maintenance, is evaluated for its contribution of the overall effects of the site over its intended life. To date, the site has never been completely drawn down. Thus, direct and indirect impacts associated with the minor oil movements and the additional 9 MMB in DOE-authorized capacity are well below the magnitude of impacts evaluated in the NEPA documentation for this site. What's more,

these are not associated with any modification to the footprint of the site, which remains unchanged.

In summary, the impacts of the currently authorized 232 MMB capacity represent no un-assessed impacts given the previous NEPA documentation of evaluation. That the site footprint remains unchanged and no impacts can be attributed to additional construction or leaching supports the determination that additional assessment of storage capacity at this site for the new authorized storage capacity is unnecessary to comply with NEPA. Thus, this SA will serve as the necessary NEPA documentation that no significant or un-assessed impacts are associated with an authorized capacity of 232 MMB for the BM site.

As to the current site inventory, the site foot print has not changed, nor have any additional caverns been leached to accommodate the additional oil, nor has the site incurred any permit non-compliances regarding the discharge of brine or general cavern capacity or specifications. The majority of adverse environmental effects evaluated in the aforementioned EISs resulted from the construction impacts of cavern creation, site preparation, and pipeline construction. On-site, potential impacts associated with the storage of additional oil result from its transport onto site up to the time of injection during fill and its withdrawal from the cavern during drawdown. Transport of this oil onto the site occurred without incident and the oil has been injected into the caverns. Transport onto the site and injection of the oil into the caverns has been conducted in accordance with all applicable Federal and state permits including NPDES permit [redacted], which governs all brine disposal, TCEQ [redacted], which governs air emissions from the site, RCT permits [redacted] and [redacted] which govern injection and storage in the caverns, etc. The storage of 9 MMB of additional oil on site is within the magnitude of impacts contemplated by the EISs as they contemplated total storage of [redacted] MMB of oil over approximately a twenty year period. The DOE-authorized capacity of 232 MMB plus the [redacted] MMB of oil transported from the site comprises approximately only one-fourth of the oil that was anticipated to be (1) transported to the site and (2) stored on-site. When the 263 MMB evaluated in the Seaway Group EIS (DOE/EIS-0021) are considered, the DOE-authorized capacity is less than one fill cycle of the impacts evaluated for the Seaway Group.

The potential adverse environmental impacts that could be associated with the transport of the oil to the site and injection into the caverns that were addressed by the previous NEPA documentation for BM attribute impacts primarily to the potential for a spill of oil and brine and the release of volatile organic compounds (VOCs) to the atmosphere during transport. The magnitude of risks evaluated in the EISs was for five fill and drawdown cycles of 223 MMB over approximately 20 years, a total fluid movement of [redacted] MMB of oil. Thus far, movement of

only 11.6% of the total fluid evaluated for transport to/from the site has occurred. An increase in the rate of spills and non-compliances has not resulted from the transport of additional oil to/from the site. An indirect impact of transport of the oil to the site and injection into the storage caverns are brine disposal and air emissions. Both have occurred in compliance with the respective permit and regulations. As air emissions are rate based and were originally evaluated for a 'major source' (emission of more than 25 tons per year of VOCs), the positive effects of conducting site operations as a 'minor source' (emission of less than 25 tons per year of VOCs) coupled with not having conducted the five full fill and drawdown cycles originally evaluated for impacts would more than compensate for the transport of a small quantity of additional oil to the site. Thus, these impacts are within the scope of impacts evaluated within the previous NEPA documentation.

As to the permanent storage of additional oil on-site, the adverse environmental impacts addressed in previous NEPA documentation has apportioned impacts to both the construction and operation and maintenance phases, which includes transport and its associated impacts. Once the oil has been injected into the caverns, it is no longer available for release to the environment and the associated VOCs are also contained and cannot volatilize into the atmosphere. Potential impacts associated with the additional oil currently stored that would result from its displacement and transport from the site in a drawdown would be minimized through compliance with current air permits. As the two degas projects have been implemented to further reduce downstream emissions from oil during distribution, these impacts would be further minimized. Therefore, the additional storage of oil in caverns on-site does not present potential significant environmental effects for which further review under NEPA would be required.

West Hackberry

Operational and Engineering Modifications

The M&O Contractor's E&C personnel noted O&E modifications at the site. These include the construction of a 7,000 barrel brine surge tank on site that was recently converted for raw water storage. Review of historical NEPA documentation revealed that a NEPA review for addition of the brine surge tank occurred in 1995, a CX was applied, and a RONR is currently on file. NEPA review for conversion to raw water occurred in 2001.

Capacity

EISs for the WH site specifically address impacts as related to the storage capacity of the site. Initially, the site was evaluated for the construction of storage capacity of 60 MMB of oil in the Final EIS for the West Hackberry Salt Dome (FEA/S-77/114). The Texoma Group EIS (DOE/EIS-0029)contemplated expansion of the WH site to 210 MMB including the construction of additional caverns and facilities and the Phase III Texoma and Seaway EIS (DOE/EIS-0075) evaluated further expansion of the WH site by either 10 or 30 MMB via construction of one additional cavern and facilities. Thus, the total storage capacity for which the environmental impacts of five fill and drawdown cycles over 20 years have been evaluated in 240 MMB. Currently, WH has a DOE-authorized storage capacity of 222 MMB and an inventory of 196.4 MMB, which is within the capacity previously evaluated for adverse environmental effects. Therefore, additional assessment of storage capacity at this site is not warranted at this time.

Programmatic Modifications

Trends resulting from cumulative and/or secondary impacts require additional evaluation of site-specific changes as a composite of all SPR sites relative to the SPR as a program. Analysis was conducted based on a comparison of the current program-wide data and configurations to the program-wide data and configurations originally evaluated. If there was a modification from the originally assessed configuration, these were compared to determine (1) whether such change was the result of maintenance, LE, or other project that would be addressed by an existing NEPA document and (2) whether impacts resulting from a previously un-reviewed modification were significant or non-significant relative to the criteria set forth above.

Active Storage Sites (West Hackberry, Bryan Mound, Big Hill, Bayou Choctaw)

Operational and Engineering Modifications

During evaluation of each site and its specific modifications, O&E trends were noted as occurring somewhat unilaterally across the current SPR sites. These trends could result in an overall programmatic modification, which must be noted and evaluated for significance. These trends include the construction of aboveground tanks for various purposes, the conversion of brine ponds to open-top tanks, the establishment of commercial potable water lines for use on-site, and an increase in small oil movements and distributions.

The first two trends noted are interrelated in that construction of aboveground storage tanks across the SPR generally coincided with LE activities. As ponds and other historical storage areas neared the end of their useful life, replacement with aboveground storage tanks effectively created more efficient operations with equivalent or decreased impacts when compared to those that were evaluated on a programmatic level in the original EISs. LE was evaluated for adverse environmental effects at both the concept and individual project levels. Generally, a CX was applicable and a RONR was generated to document the review.

At the TX sites, the establishment of commercial potable water lines for use on-site was observed. Previously, the sites had been utilizing raw water for sanitary waste and, in the interest of decreasing risk to human health and long-term cost, the utilization of potable water via a connection to commercial lines was determined to be the most viable option. Construction associated with connection to potable water sources was not assessed in the EISs; however, a NEPA review was conducted for each site prior to construction. A CX is currently on file for the BH site. Documentation of the NEPA review for construction of the potable water line at the BM site was not available in the library, but a review of the permitting file indicated that a NEPA review was a required portion of the application package for the COE permit that was obtained. From this record, it can be inferred that a NEPA review was conducted prior to construction, that a CX applied and that documentation in the form of a RONR was utilized to facilitate the permitting process.

Finally, an increase in small oil movements and distribution was noted. The original EISs evaluated five full fill and drawdown cycles for each site over a twenty year period. They did not necessarily contemplate smaller oil movements and distributions over a longer period of time that would clearly have smaller, more protracted impacts. Regardless of the nature of the impacts of these smaller oil movements, the decrease in barrels of oil actually moved since the inception of the program (a fraction of a single drawdown) and the barrels of oil anticipated to be moved in the EISs support a conclusion that impacts that have occurred are well within the scope of the impacts originally evaluated. Site-specifically, the SPR storage facilities have been evaluated for impacts associated with five full fill and drawdown cycles of [redacted] MMB of oil. To date, [redacted] MMB of oil have been 'moved' from the currently active SPR storage facilities. Of that, the amount of oil actually drawdown is approximately [redacted] MMB. Thus, only 2.35% of all oil anticipated to be transported and for which potential adverse environmental impacts were evaluated has actually been 'moved.' Of that, only 1% of the oil is actual oil that has been 'drawn down.' Thus, consideration of the sheer numbers associated with the original evaluation versus actual oil movements supports the determination that the scope and

magnitude of impacts originally evaluated encompasses the actual impacts resulting from oil movements from the SPR sites.

As a program, the SPR has been vigilant in adhering to the principles of NEPA. Inclusion of NEPA review early in the project management process allows DOE to remain compliant with both the spirit and the letter of NEPA. Trends noted at the programmatic level require no additional evaluation. Thus, this SA will serve as the necessary NEPA documentation that no significant or un-assessed impacts are associated with programmatic trends on the SPR.

Capacity

A physical increase in storage capacities has occurred across the sites. Several site-wide EISs have evaluated the original storage capacities and each increase in storage capacity for the sites. The SPR as a program, however, has evaluated the total storage capacity of the program to one billion barrels of oil in DOE/EIS-0034. What's more, NEPA documents have also evaluated storage capacity of oil for the SPR program based on regional 'groupings,' the Seaway Group, the Capline Group, and the Texoma. The total storage capacity that has been evaluated at the site-specific level is 775 MMB. The total storage capacity that has been evaluated by DOE in previous NEPA documentation at the regional 'group' level is 1052 MMB (DOE/EIS-0034).

A review of the applicable programmatic EISs has revealed that program level storage capacities for the Capline and Texoma Group are within the previously evaluated capacity. The program level storage capacity previously evaluated for the Seaway Group has been exceeded. The only SPR site contained within the Seaway Group is the BM site, which has been evaluated on a site-specific level for increases in capacity. Refer to the "Capacity" subsection of the Bryan Mound section of this document for a complete discussion of the site-specific evaluations of capacity and effects of current site inventory relative to potentially significant environmental effects. Further evaluation of storage capacity for the SPR program is not recommended at this time as modifications do not represent an impact beyond that previously identified for operation and maintenance of the SPR and do not provide a catalyst for preparation of a new EIS or SEIS.

Conclusion

Assessment of the current O&E characteristics of the SPR sites and the SPR as a program indicated that the configuration remains within the scope of impacts

evaluated under the original and supplemental EISs or subsequent RONR such as an EA or CX. In fact, under LE, environmental impacts and potential environmental impacts associated with site configurations and resulting from site operations were reduced as more controls were introduced and processes were refined. Examples of this include the use of injection pump filters, heat exchangers, diffusers and the degas projects. The addition of degas plants at each site was covered for all four active sites in DOE/EA-954. The plant is currently being constructed at the BH site and has not yet commenced operations.

Assessment of the current capacity of the SPR sites and the SPR as a program indicated that, for all sites except BM, current inventory is below the NEPA-final capacity addressed in the original and supplemental EISs and EAs and that for two sites, BM and BH, the DOE-authorized capacity exceeds the NEPA-final capacity addressed in the original and supplemental EISs. Further assessment of the current inventory and DOE-authorized capacity for BM indicated that the current site status is compliant with state and Federal permits as discussed in the section titled Bryan Mound- *Capacity*, did not represent a significant impact relative to NEPA with less lifecycle impact than originally projected due to reduced drawdown and refill frequency and, thus, would not provide a basis for the preparation of a new EIS or SEIS. Additionally, assessment of the DOE-authorized Capacity for BH indicated that expansion of the caverns based on additional leaching during oil movements was also compliant with state and federal permits, was within the scope of impacts originally evaluated and would not provide a basis for preparation of a new EIS or SEIS.